


```
LL      IIIII  BBBB BBBB  FFFFFFFF  MM      MM  UU      UU  LL
LL      IIIII  BBBB BBBB  FFFFFFFF  MM      MM  UU      UU  LL
LL      II     BB      BB  FFFFFFFF  MMMM  MMMM  UU      UU  LL
LL      II     BB      BB  FFFFFFFF  MMMM  MMMM  UU      UU  LL
LL      II     BB      BB  FFFFFFFF  MM      MM  UU      UU  LL
LL      II     BB      BB  FFFFFFFF  MM      MM  UU      UU  LL
LL      II     BB      BB  FFFFFFFF  MM      MM  UU      UU  LL
LL      II     BB      BB  FFFFFFFF  MM      MM  UU      UU  LL
LL      II     BB      BB  FFFFFFFF  MM      MM  UU      UU  LL
LL      II     BB      BB  FFFFFFFF  MM      MM  UU      UU  LL
LL      IIIII  BBBB BBBB  FFFFFFFF  MM      MM  UUUUUUUUUU  LLLLLLLLLL
LL      IIIII  BBBB BBBB  FFFFFFFF  MM      MM  UUUUUUUUUU  LLLLLLLLLL
```

```
LL      IIIII  SSSSSSSS
LL      IIIII  SSSSSSSS
LL      II     SS
LL      II     SS
LL      II     SS
LL      II     SS
LL      II     SSSSSS
LL      II     SSSSSS
LL      II     SS
LL      II     SS
LL      II     SS
LL      IIIII  SSSSSSSS
LL      IIIII  SSSSSSSS
```

(2) 46
(3) 75

DECLARATIONS
LIBSEMUL - Execute EMUL instruction

LI
1-
.....

```
0000 1 .TITLE LIBSEMUL - Execute EMUL instruction
0000 2 .IDENT /1-001/ ; File: LIBEMUL.MAR Edit: SBL1001
0000 3
0000 4
0000 5 *****
0000 6
0000 7 *
0000 8 * COPYRIGHT (c) 1978, 1980, 1982, 1984 BY
0000 9 * DIGITAL EQUIPMENT CORPORATION, MAYNARD, MASSACHUSETTS.
0000 10 * ALL RIGHTS RESERVED.
0000 11 *
0000 12 * THIS SOFTWARE IS FURNISHED UNDER A LICENSE AND MAY BE USED AND COPIED
0000 13 * ONLY IN ACCORDANCE WITH THE TERMS OF SUCH LICENSE AND WITH THE
0000 14 * INCLUSION OF THE ABOVE COPYRIGHT NOTICE. THIS SOFTWARE OR ANY OTHER
0000 15 * COPIES THEREOF MAY NOT BE PROVIDED OR OTHERWISE MADE AVAILABLE TO ANY
0000 16 * OTHER PERSON. NO TITLE TO AND OWNERSHIP OF THE SOFTWARE IS HEREBY
0000 17 * TRANSFERRED.
0000 18 *
0000 19 * THE INFORMATION IN THIS SOFTWARE IS SUBJECT TO CHANGE WITHOUT NOTICE
0000 20 * AND SHOULD NOT BE CONSTRUED AS A COMMITMENT BY DIGITAL EQUIPMENT
0000 21 * CORPORATION.
0000 22 *
0000 23 * DIGITAL ASSUMES NO RESPONSIBILITY FOR THE USE OR RELIABILITY OF ITS
0000 24 * SOFTWARE ON EQUIPMENT WHICH IS NOT SUPPLIED BY DIGITAL.
0000 25 *
0000 26 *****
0000 27
0000 28
0000 29 :++
0000 30 : FACILITY: General Utility Library
0000 31
0000 32 : ABSTRACT:
0000 33
0000 34 : This module contains LIBSEMUL, which makes the VAX EMUL instruction
0000 35 : available as a callable procedure.
0000 36
0000 37 : ENVIRONMENT: Runs at any access mode, AST Reentrant
0000 38
0000 39 : AUTHOR: Steven B. Lionel, CREATION DATE: 8-July-1981
0000 40
0000 41 : MODIFIED BY:
0000 42
0000 43 : 1-001 - Original. SBL 8-July-1981
0000 44 :--
```



```
0000 46      .SBTTL  DECLARATIONS
0000 47  :
0000 48  : LIBRARY MACRO CALLS:
0000 49  :
0000 50      $$$DEF      ; Define $$ symbols
0000 51  :
0000 52  : EXTERNAL DECLARATIONS:
0000 53  :
0000 54      .DSABL  GBL      ; Force all external symbols to be declared
0000 55      NONE
0000 56  :
0000 57  : MACROS:
0000 58  :
0000 59      NONE
0000 60  :
0000 61  : EQUATED SYMBOLS:
0000 62  :
0000 63      NONE
0000 64  :
0000 65  : OWN STORAGE:
0000 66  :
0000 67      NONE
0000 68  :
0000 69  : PSECT DECLARATIONS:
0000 70  :
00000000 71      .PSECT _LIB$CODE PIC, USR, CON, REL, LCL, SHR, -
0000 72      EXE, RD, NOWRT, LONG
0000 73
```

```
0000 75 .SBTTL LIBSEMUL - Execute EMUL instruction
0000 76 :++
0000 77 : FUNCTIONAL DESCRIPTION:
0000 78 :
0000 79 : This procedure makes the VAX EMUL instruction available as
0000 80 : a callable procedure.
0000 81 :
0000 82 : The multiplicand argument is multiplied by the multiplier
0000 83 : argument giving a double-length result. The addend argument
0000 84 : is sign-extended to double-length and added to the result, and
0000 85 : then the product argument is replaced by the final result.
0000 86 :
0000 87 : For more information, see the VAX-11 Architecture Handbook.
0000 88 :
0000 89 : CALLING SEQUENCE:
0000 90 :
0000 91 : status.wlc.v = LIBSEMUL (multiplier.rl.r, multiplicand.rl.r,
0000 92 : addend.rl.r, product.wq.r)
0000 93 :
0000 94 : FORMAL PARAMETERS:
0000 95 :
00000004 0000 96 : multiplier = 4 ; The address of the longword integer multiplier.
00000008 0000 97 :
00000008 0000 98 : multiplicand = 8 ; The address of the longword integer multiplicand.
0000000C 0000 99 :
0000000C 0000 100 : addend = 12 ; The address of the longword integer addend.
00000010 0000 101 :
00000010 0000 102 : product = 16 ; The address of a quadword integer for the
00000010 0000 103 : product result.
0000 104 :
0000 105 : IMPLICIT INPUTS:
0000 106 :
0000 107 : NONE
0000 108 :
0000 109 : IMPLICIT OUTPUTS:
0000 110 :
0000 111 : NONE
0000 112 :
0000 113 : COMPLETION STATUS:
0000 114 :
0000 115 : SS$_NORMAL, normal successful completion
0000 116 :
0000 117 : SIDE EFFECTS:
0000 118 :
0000 119 : NONE
0000 120 :
0000 121 : --
0000 122 :
0000 123 : .ENTRY LIBSEMUL, ^M<IV> ; Entry point
0000 124 :
0000 125 : EMUL @multiplicand(AP), @multiplier(AP), -
0000B 126 : @addend(AP), @product(AP)
0000B 127 :
0000B 128 : MOVL #SS$_NORMAL, R0 ; The EMUL can not fail
0000E 129 : RET
0000F 130 :
0000F 131 : .END ; End of module LIBSEMUL
```

```
10 BC 0C BC 04 BC 08 BC 7A
50 01 D0 04
```

4000

LIBSEMUL
Symbol table

- Execute EMUL instruction

C 7

16-SEP-1984 00:06:36
6-SEP-1984 11:06:25

VAX/VMS Macro V04-00
[LIBRTL.SRC]LIBEMUL.MAR;1

Page 4
(3)

ADDEND
LIBSEMUL
MULTIPLICAND
MULTIPLIER
PRODUCT
SS\$ _NORMAL

= 0000000C
00000000 RG 02
= 00000008
= 00000004
= 00000010
= 00000001

! Psect synopsis !

PSECT name	Allocation	PSECT No.	Attributes
. ABS .	00000000 (0.)	00 (0.)	NOPIC USR CON ABS LCL NOSHR NOEXE NORD NOWRT NOVEC BYTE
\$AB\$\$	00000000 (0.)	01 (1.)	NOPIC USR CON ABS LCL NOSHR EXE RD WRT NOVEC BYTE
_LIB\$CODE	0000000F (15.)	02 (2.)	PIC USR CON REL LCL SHR EXE RD NOWRT NOVEC LONG

! Performance indicators !

Phase	Page faults	CPU Time	Elapsed Time
Initialization	29	00:00:00.05	00:00:01.48
Command processing	102	00:00:00.28	00:00:02.20
Pass 1	179	00:00:02.41	00:00:10.72
Symbol table sort	0	00:00:00.42	00:00:02.64
Pass 2	40	00:00:00.47	00:00:03.02
Symbol table output	3	00:00:00.02	00:00:00.02
Psect synopsis output	2	00:00:00.01	00:00:00.01
Cross-reference output	0	00:00:00.00	00:00:00.00
Assembler run totals	357	00:00:03.67	00:00:20.10

The working set limit was 1200 pages.
19637 bytes (39 pages) of virtual memory were used to buffer the intermediate code.
There were 30 pages of symbol table space allocated to hold 412 non-local and 0 local symbols.
131 source lines were read in Pass 1, producing 12 object records in Pass 2.
8 pages of virtual memory were used to define 7 macros.

! Macro library statistics !

Macro library name

Macros defined

_ \$255\$DUA28:[SYSLIB]STARLET.MLB;2

4

469 GETS were required to define 4 macros.

There were no errors, warnings or information messages.

MACRO/ENABLE=SUPPRESSION/DISABLE=(GLOBAL,TRACEBACK)/LIS=LIS\$:LIBEMUL/OBJ=OBJ\$:LIBEMUL MSRC\$:LIBEMUL/UPDATE=(ENH\$:LIBEMUL)

0206 AH-BT13A-SE
VAX/VMS V4.0

DIGITAL EQUIPMENT CORPORATION
CONFIDENTIAL AND PROPRIETARY